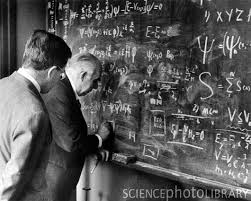
**Physics scholarship themes 2017-A literacy challenge!**

*Pleas Please be well prepared for the following physics ideas and questions. Over the year, prepare to discuss each one of these orally! and then be able to write about them!*

*Use di Ensure to use diagrams, formulae, graphs.. any visual props, equipment to support your explanations.*

1. The Doppler effect- Explain what is the Doppler effect when the sound is a moving source or in the situation when there is a moving listener or when the listener is at an angle to the source.
2. Diffraction of waves around barriers-how does this occur? What is diffraction? Is diffraction more pronounced through a small opening or through a large opening?
3. What exactly did Thomas Young demonstrate in his famous experiment with light?
4. What accounts for the different colours in either a soap bubble or layer of petrol on water?
5. What phenomenon distinguishes longitudinal waves from transverse waves?
6. What is light? Explain …what is light in 3 minutes.
7. Standing waves in musical instruments-discuss and demonstrate.
8. The Bohr model of the hydrogen atom.
9. The quantisation of energy; discrete atomic energy levels; electron transition between energy levels; ionisation; atomic line spectra and atomic absorption-what’s the difference?
10. The photoelectric effect- Einstein received the noble prize for this-why so significant?
11. Fusion and Fission-what’s the difference?
12. Binding energy and mass deficit; conservation of mass-energy for nuclear reactions
13. Why does E=MC2 ?
14. Wave / particle duality-how can light have a dual nature?
15. Effects of the strong interaction and Coulombic repulsion.
16. Newton’s three laws of motion-real life examples of this?
17. Why does an apple fall?
18. Why is there no such thing as a free lunch?
19. Momentum and impulse-what’s the difference?
20. Centrifugal and centripetal-what’s the difference?
21. Geostationary satellites-what do they do?
22. Explain Simple harmonic motion and why is it so different from other types of motion?
23. How is electricity produced?
24. What is AC/DC mean? What are the applications of this?
25. Ohm’s law-why is this so important in simple circuits?
26. Fleming’s right hand rule-demonstrate how this works.